WHAT IS CLAIMED IS:

1. A color reproduction system comprising:

tristimulus value calculation means for calculating tristimulus values under observation illumination light corresponding to a spectral reflectance of an object, said tristimulus value calculation means calculating the tristimulus values using spectral reflectance data of a color chip formed from a plurality of unit color chips, color chip sensing data obtained by sensing the color chip with an input device under the observation illumination light, spectral sensitivity data of said input device, and color matching function data;

means for calculating an output color image signal based on the calculated tristimulus values; and

means for outputting a color image based on the output color image signal.

2. A system according to claim 1, wherein said tristimulus value calculation means multiplies the color chip sensing data by a matrix obtained from a relationship between a product of the spectral reflectance of the object and color matching functions and a product of the spectral reflectance data of the color chip and the spectral sensitivity of said input device, thereby calculating the tristimulus values.

3. A system according to claim 1, wherein said tristimulus value calculation means obtains the

tristimulus values as a linear sum of basis function tristimulus values obtained by multiplying the color chip sensing data by a matrix obtained from a relationship between a product of a plurality of basis functions of the spectral reflectance of the object and color matching functions and a product of the spectral reflectance data of the color chip and the spectral sensitivity of said input device.

4. A system according to claim 1, wherein each of said first image sensing means and said second image sensing means comprises a digital camera.

5. A system according to claim 1, wherein the color chip has a plurality of unit color chips having independent spectral reflectances and arrayed in a matrix.

6. A system according to claim 1, wherein said means for outputting the color image comprises a monitor, and said means for outputting the output color image calculates the output color image on the basis of characteristics of said monitor.

7. A color reproduction system comprising:

first image sensing means for sensing an object under sensing illumination light;

means for calculating a spectral reflectance of image data of the object sensed by said first image sensing means on the basis of spectral sensitivity data of said first image sensing means, spectrum data of

the sensing illumination light, statistic data of a spectral reflectance of the object, and outputting spectral reflectance image data corresponding to the calculated spectral reflectance;

second image sensing means for sensing a color chip under observation illumination light;

means for calculating tristimulus values of the object under the observation illumination light on the basis of the output spectral reflectance image data, color chip image data of the color chip sensed by said second image sensing means, spectral sensitivity data of said second image sensing means, color chip spectral reflectance data representing a spectral reflectance distribution of the color chip, and color matching function data;

means for calculating an output color image signal on the basis of the calculated tristimulus values; and

means for outputting a color image on the basis of the output color image signal.

8. A system according to claim 7, wherein each of said first image sensing means and said second image sensing means comprises a digital camera.

9. A system according to claim 7, wherein the color chip has a plurality of unit color chips having independent spectral reflectances and arrayed in a matrix.

10. A system according to claim 7, wherein said

means for outputting the color image comprises a monitor, and said means for outputting the output color image calculates the output color image on the basis of characteristics of said monitor.

11. A color reproduction system comprising:

first image sensing means for sensing an object under sensing illumination light;

means for outputting expansion coefficient data which is represented as a linear sum of basis functions of a spectral reflectance of the object on the basis of spectral sensitivity data of said first image sensing means, spectrum data of the sensing illumination light and statistic data of a spectral reflectance of the object;

second image sensing means for sensing a color chip under observation illumination light;

means for calculating tristimulus values of the object under the observation illumination light on the basis of the output expansion coefficient data, color chip image data of the color chip sensed by said second image sensing means, spectral sensitivity data of said second image sensing means, color chip spectral reflectance data representing a spectral reflectance distribution of the color chip, and color matching function data;

means for calculating an output color image signal on the basis of the calculated tristimulus values; and

means for outputting a color image on the basis of the output color image signal.

12. A system according to claim 11, wherein each of said first image sensing means and said second image sensing means comprises a digital camera.

13. A system according to claim 11, wherein the color chip has a plurality of unit color chips having independent spectral reflectances and arrayed in a matrix.

14. A system according to claim 11, wherein said means for outputting the color image comprises a monitor, and said means for outputting the output color image calculates the output color image on the basis of characteristics of said monitor.